Electrochemical biosensor

Veröffentlichungsnr. (Sek.)	US5759364
Veröffentlichungsdatum :	1998-06-02
Erfinder :	HILDENBRAND KARL-HEINZ (DE); CHARLTON STEVEN C (US); DENG YINGPING (US); JOHNSON LARRY D (US); VENOSKY JAMES J (US)
Anmelder :	BAYER AG (US)
Veröffentlichungsnummer :	ZA9803200
Aktenzeichen: (EPIDOS-INPADOC-normiert)	US19970850608 19970502
Prioritätsaktenzeichen: (EPIDOS-INPADOC-normiert)	US19970850608 19970502
Klassifikationssymbol (IPC) :	G01N27/26
Klassifikationssymbol (EC) :	C12Q1/00B; C12Q1/00B2
Korrespondierende Patentschriften	AU6378398, AU723307, CA2236070, EP0877244, B1, IL123335, JP10318970, NO981684, NZ329791

Bibliographische Daten

Disclosed is an electrochemical sensor which is made up of an insulating base plate bearing an electrode on its surface which reacts with an analyte to produce mobile electrons. The base plate is mated with a lid of a deformable material which has a concave area surrounded by a flat surface so that when mated to the base plate there is formed a capillary space into which a fluid test sample can be drawn. The side of the lid facing the base is coated with a polymeric material which serves to bond the lid to the base plate and to increase the hydrophilic nature of the capillary space.

Beschreibung

BACKGROUND OF THE INVENTION

The present invention relates to an electrochemical biosensor that can be used for the quantitation of a specific component (analyte) in a liquid sample and, more specifically, to a method of manufacturing such a biosensor. Electrochemical biosensors of the type under consideration are disclosed in U.S. Pat. Nos. 5,120,420 and 5,264,103. The devices disclosed in these patents have a plastic base upon which carbon electrodes are printed which electrodes are covered with a reagent layer which comprises a hydrophilic polymer in combination with an oxidoreductase specific for the analyte. There is typically a spacer element placed on the base, which element is cut out to provide a generally U shaped piece and a cover piece, so that when the base, spacer element and cover piece are laminated together, there is created a capillary space containing the electrodes and the reagent layer. In addition to the oxidoreductase, there is included an electron acceptor on the reagent layer or in another layer within the capillary space. A hydrophilic polymer, e.g. carboxymethyl cellulose, is used to facilitate the drawing of the aqueous test fluid into the capillary space.

There has been developed more recently an electro-chemical sensor which is comprised of two parts; a lower part (base) which carries the electrode structure with an oxidoreductase and electron acceptor evenly distributed in a hydratable polymeric matrix on the electrodes'surface, and an upper part (lid) which is embossed to form three sides of a capillary space with the base forming the fourth side upon mating of the lid and base. The base and lid are laminated together by means of a heat activated adhesive coating on the lid. The sensor is used by dipping the open end of the capillary into a small drop of test fluid, such as blood, which is drawn into the capillary tube so that it covers the enzyme and electron acceptor on the electrode's surface. Due to the hydratable nature of the polymer matrix, it disperses in the aqueous test fluid thereby allowing the oxidoreductase, which is glucose oxidase when the sensor is designed to determine the concentration of glucose in blood, to oxidize the analyte and

(51) IPC klasse	(21) Patentsøknad nr. (22) Inngivelsesdag. (24) Løpedag. (30) Prioritet. (41) Allment tilgjengelig dag. (62) Stamsøknad nr. (71) Patentsøker. (72) Oppfinner. (74) Fullmektig. (63) Opplysning om deponering. (85) Videreføringsdag. (86) Internasjonal inngivelsesdag og -søknadsnr		(54) Benevnelse
E 21 B 044/00	19984453	(22) 24.09.1998 (30) 25.03.1996, US, 621414 (86) 21.03.1997, PCT/US97/04605 (85) 24.09.1998 (24) 21.03.1997 (41) 04.11.1998 (74) Tandbergs Patentkontor AS,Oslo	(71) Dresser Industries Inc 2001 Ross Avenue, Dallas, TX 75201, US (72) Lee Morgan Smith Houston, TX, US (72) William A. Goldman Houston, TX, US	Fremgangsmåte for regulering av boreparametre på en borekrone
E 21 B 047/00	19982027	Se E 21 B 044/00		
E 21 B 047/06	19984078	Se E 21 B 033/035		
F 02 C 007/20	19972078	Se F 16 M 001/04		
F 03 D 001/02	19972035	(22) 02.05.1997 (30) Ingen (24) 02.05.1997 (41) 03.11.1998 (74) Ingen	(71) Slavoljub Pavlovic Åsengata 8 A, 0480 Oslo, NO (72) Søkeren	Propell med integrert rotorblad system
F 04 B 041/06	19981995	(22) 04.05.1998 (30) 07.05.1997, US, 852476 (24) 04.05.1998 (41) 09.11.1998 (74) AS Bergen Patentkontor,Bergen	(71) Camco International Inc P.O. Box 14484, Houston, TX 77221, US (72) Paul J. Krowski Bartlesville, OK, US	Horisontalpumpesystem
F 04 D 029/02	19981447	(22) 31.03.1998 (30) 05.05.1997, DE, 19718981 (24) 31.03.1998 (41) 06.11.1998 (74) Gunnar O. Reistad, Bryns Patentkontor AS,Oslo	(71) Proair GmbH Gerätebau, Raute 17/1, D-88260 Argenbühl-Eglofs, DE (72) Paul Roth Isny, DE	Transportinnretning for flytende og gassformige medier, så som sugeapparater, særlig vakuumpumper og lignende
F 04 F 00 0/02	19984537	Se E 21 B 043/12		
F 04 F 001/08	19984537	Se E 21 B 043/12		
F 16 B 043/00	19984608	Se E 04 D 005/14		
F 16 L	19982031	(22) 05.05.1998 (30) 05.05.1997, FR, 9705514 (24) 05.05.1998 (41) 06.11.1998 (74) J.K. Thorsens Patentbureau AS,Oslo	(71) Pont-à-Mousson SA 91, avenue de la Libération, F-54000 Nancy, FR (72) Bruno Gensch Pont-à-Mousson, FR (72) Jacques Lucien Demoldson Loisy, FR (72) Didier Lescot Toul, FR (72) René Bourgin Pont-à-Mousson, FR	Anordning for skjøting av rørelementer
F 16 M 001/04 F 02 C 007/20	19972078	(22) 06.05.1997 (30) Ingen (24) 06.05.1997 (41) 09.11.1998 (74) Bjarne G. Coward, Bryns Patentkontor AS,Oslo	(71) Kvaerner Energy AS Postboks 9277 Grønland, 0134 Oslo, NO (72) Knuth Johr Nittedal, NO	Fundamentramme for en gassturbin
G 01 J 003/36 G 08 017/12	19982067	(22) 06.05.1998 (30) 07.05.1997, US, 852086 (24) 06.05.1998 (41) 09.11.1998 (74) Jens F. C. Langfeldt, Bryns Patentkontor AS,Oslo	(71) Detector Electronics Corp 6901 West 110th Street, Minneapolis, MN 55438, US (72) John D. King Roseville, MN, US (72) Frederick J. Schuler Lakeville, MN, US	Fremgangsmåte og anordning for brannddetekajon basert på overlappende spektralbånd
G 01 N 027/327	19981684	(22) 15.04.1998 (30) 02.05.1997, US, 850608 (24) 15.04.1998 (41) 05.11.1998 (74) Kari O. Hanssen, Bryns Patentkontor AS,Oslo	(71) Bayer Corp P.O. Box 40, Elkhart, IN 46515-0040, US (72) Steven C. Charlton Osceola, IN, US (72) Yingming Deng Granger, IN, US (72) Karl-Heinz Hildenbrand Krefeld, DE (72) Larry D. Johnson Elkhart, IN, US (72) James J. Venosky Goshen, IN, US	Elektrokjemisk biosensor

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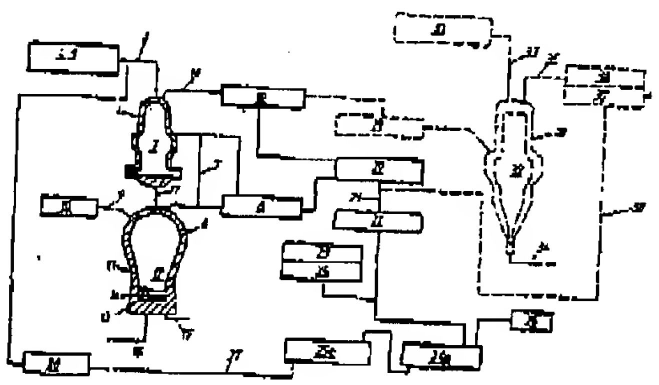
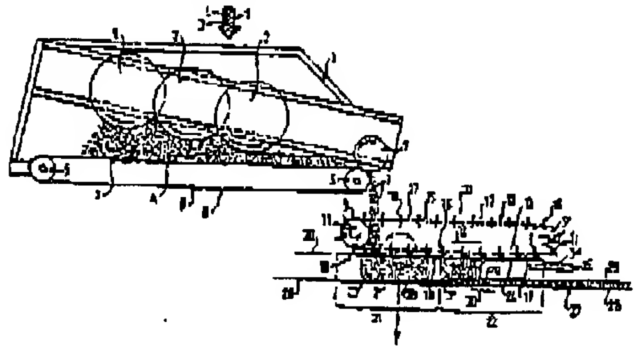
21: 98/3154. 22: 98-04-15. 43: 1998-10-22.
51: C 21 B.
71: Deutsche Voest-Alpine Industrieanlagenbau GmbH.
72: Herbert Grunbacher; Gunter Schrey.
33: AT. 31: A659/97. 32: 97-04-16.
54: **Method of producing molten pig iron or molten steel pre-products.**
00: 15.

57: In a method of producing molten pig iron (13) or molten steel pre-products from charging substances formed of iron ore (4), preferably in the shape of lumps and/or pellets, and optionally of fluxes (5), the charging substances are directly reduced to sponge iron in a reduction zone (2), the sponge iron is charged into a melt-down gasifying zone (12) and, there, is melted under the supply of carbon carriers (10) and an oxygen-containing gas, wherein a CO- and H_2-containing reducing gas is generated that is withdrawn from the melt-down gasifying zone (12) and introduced into the reduction zone (2), is reacted there and is withdrawn as a topgas, wherein the topgas is subjected to scrubbing and the sludges thus separated are at least partially agglomerated. To utilize the agglomerates thus formed while expending as little energy as possible, the agglomerates are recirculated into the reduction zone (2).



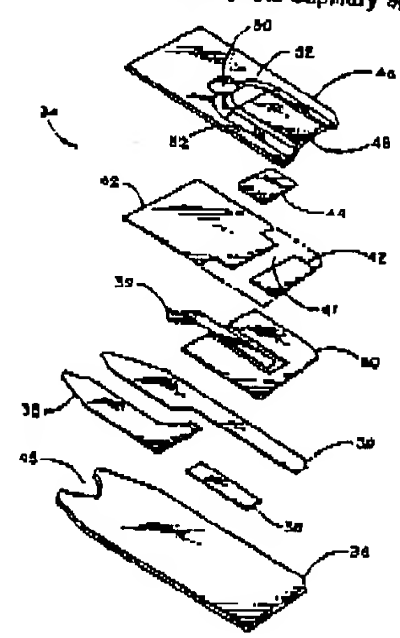
21: 98/3199. 22: 98-04-18. 43: 1998-10-22.
51: B 27 N, B 07 B.
71: Kvaerner Panel Systems GmbH Maschinen- Und Anlagenbau.
72: Ove-Walter Cornils; Hans-Joachim Iredl; Ludwig Twick.
33: DE. 31: 197 16 130.8. 32: 97-04-17.
54: **Apparatus for the fractionation and scattering of particles, in particular fibrous particles.**
00: 43.

57: An apparatus is described for the fractionating of particles of different sizes, in particular fibrous particles, especially of fibres, chips or the like containing ligno-cellulose and/or cellulose. The apparatus comprises a metering bunker which contains the non-fractionated particles, a sub-stantially areal screening apparatus, following the metering bunker and a supply unit of the metering bunker, by which the particles can be brought from the metering bunker onto the surface of the screening apparatus. In the region of the surface of the screening apparatus a transport apparatus is provided having a plurality of mutually separated portioning sections movable along the surface of the screening apparatus, within each of which some of the particles brought by the supply unit onto the surface of the screening apparatus are transportable and in particular displaceable over the surface of the screening apparatus. Furthermore, an apparatus is described for the scattering of particles using such an apparatus, such as for example wood fibres, wood chips or the like.



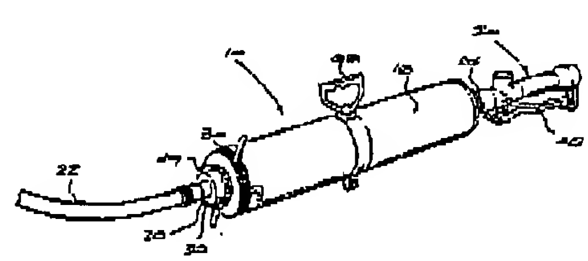
21: 98/3200. 22: 98-04-16. 43: 1998-11-22.
51: G 01 N.
71: Bayer Corporation.
72: Steven C. Charlton; Yingping Deng; Karl-Heinz Hildenbrand; Larry D. Johnson; James J. Venosky.
33: US. 31: 08/850,608. 32: 97-05-02.
54: **Electrochemical biosensor.**
00: 36.

57: Disclosed is an electrochemical sensor which is made up of an insulating base plate bearing an electrode on its surface which reacts with an analyte to produce mobile electrons. The base plate is mated with a lid of a deformable material which has a concave area surrounded by a flat surface so that when mated to the base plate there is formed a capillary space into which a fluid test sample can be drawn. The side of the lid facing the base is coated with a polymeric material which serves to bond the lid to the base plate and to increase the hydrophilic nature of the capillary space.



21: 98/3335. 22: 98-04-21. 43: 1998-10-26.
51: E 21 D, B 01 F, B 05 B.
71: Frank Lane Engineering (Proprietary) Limited; Fosroc (Proprietary) Limited.
72: Colin Robert Lane; Arthur Terence Harrison.
33: ZA. 31: 97/3391. 32: 97-04-21.
54: **Grout gun.**
00: 20.

57: A method of charging a hole with a material includes the steps of filling a chamber of a gun with the material, inserting a supply pipe connected to the chamber into the hole, and using fluid under pressure to force the material to flow from the chamber through the supply pipe into the hole.



21: 98/3248. 22: 98-04-17. 43: 1998-10-26.
51: B 05 B.
71: Bogdan Bogdanovic.
72: Bogdan Bogdanovic.
33: ZA. 31: 97/3469. 32: 97-04-23.
54: **Shower head.**
00: 8.